



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|-------------|----------------------|---------------------|------------------|
| 10/671,813 | 09/25/2003 | Eric Neyret | 4717-7800 | 6832 |
| 28765 | 7590 | 11/30/2005 | EXAMINER | |
| WINSTON & STRAWN LLP 1700 K STREET, N.W. WASHINGTON, DC 20006 | | | NGUYEN, DILINH P | |
| | | | ART UNIT | PAPER NUMBER |
| | | | 2814 | |

DATE MAILED: 11/30/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

AK

| | | | |
|------------------------------|------------------------|---------------------|--|
| Office Action Summary | Application No. | Applicant(s) | |
| | 10/671,813 | NEYRET, ERIC | |
| | Examiner | Art Unit | |
| | DiLinh Nguyen | 2814 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 September 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-19 is/are rejected.
- 7) ☒ Claim(s) 20 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date <u>6/21/05</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Drawings

Figure 1 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

2. Claims 1-19 are rejected under 35 U.S.C. 102(e) as being anticipated by Applicant Admitted Prior Art (figs. 1-2a).

- Regarding claims 1 and 19, AAPA disclose a surface treatment process for a semiconductor wafer that has been obtained using a transfer technique, which comprises:

heating such semiconductor wafer from an ambient temperature to a first higher temperature [Temperature from R_T to T_1] (fig. 1);

pausing the heating at the first higher temperature for a time sufficient to stabilize the wafer; and

further heating the wafer from the first higher temperature to a target higher temperature T_2 during a predetermined time interval, with the further heating during an initial portion of the time interval being conducted at a relatively low heating rate and heating during a final portion of the time interval being conducted at a relatively higher heating rate to thus minimize slip line faults in the surface of the wafer (fig. 2a).

- Regarding claim 2, AAPA discloses that the further heating during the predetermined time interval is not uniform and overall is about $50^{\circ}\text{C}/\text{sec}$ (page 6, lines 27-30).
- Regarding claim 3, AAPA discloses that the further heating continuously increases from the low heating rate to the high heating rate (fig. 2a).
- Regarding claims 4 and 13, AAPA discloses that the low heating rate is conducted from more than 50% to about 80% of the predetermined time interval and the high heating rate is conducted from about less than 50% to about 20% of the predetermined time interval (fig. 2a).
- Regarding claims 5 and 14, AAPA discloses pausing the heating during the initial portion of the time interval and then resuming heating (fig. 1).

- Regarding claim 6, AAPA discloses the ambient temperature is room temperature R_T and the first higher temperature T_1 is about 700 to 800°C (fig. 1, page 1, lines 24-25).
- Regarding claim 7, AAPA discloses the low heating rate of the further heating is conducted from the first higher temperature T_1 to an intermediate temperature of between about 800 to about 1100°C (fig. 2a), and the high heating rate of the further heating is conducted from the intermediate temperature to the target temperature (fig. 2a).
- Regarding claim 8, AAPA discloses that the temperature is about 1100 to 1300°C (fig. 2a, page 1, line 22).
- Regarding claims 9 and 16, AAPA discloses that the high heating rate of the further heating is about 25 to 50°C per second (page 6, lines 29-30).
- Regarding claims 10 and 17, AAPA discloses that the wafer is made of silicon (page 1, line 5-6).
- Regarding claims 11 and 18, AAPA discloses that the wafer is an SOI wafer (page 1, line 5).
- Regarding claim 12, AAPA disclose a surface treatment process for a semiconductor wafer that has been obtained using a transfer technique, which comprises: the first higher temperature T_1 is about 700 to 800°C (fig. 1, page 1, lines 24-25); and the further heating is to a target higher temperature of about 1100 to 1300°C [T_2] (fig. 2a) and with the relatively low heating rate conducted to

an intermediate temperature of about 800 to 1000⁰C [the temperature can range from between T₁ to T₂] (fig. 2a) .

- Regarding claim 15, AAPA discloses that the first higher temperature T₁ is around 750⁰C (fig. 1, page 1, lines 24-25) and the target temperature is in the range of about 1150 to 1250⁰C (fig. 2a, page 1, lines 22).

Allowable Subject Matter

Claim 20 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is an examiner's statement of reasons for allowance:

The prior art of record fails to disclose the combination of a method for minimizing slip faults on a surface of a semiconductor wafer recited in the base claim 1, including the combination of the further heating is conducted at a non-rectilinear heating rate.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Response to Arguments

Applicant's arguments filed 9/14/05 have been fully considered but they are not persuasive.

- The applicant argues that a further heating step is not disclosed or suggested by

the described prior art.

The arguments have been fully considered but they are not persuasive because Applicant Admitted Prior Art (fig. 2a) clearly discloses the claimed language (claim 1), such as further heating the wafer from the first higher temperature to a target higher temperature T_2 during a predetermined time interval, with the further heating during an initial portion of the time interval being conducted at a relatively low heating rate and heating during a final portion of the time interval being conducted at a relatively higher heating rate to thus minimize slip line faults in the surface of the wafer (fig. 2a).

- The applicant argues that AAPA does not disclose further heating during the predetermined time interval is not uniform and the further heating continuously increases from the low heating rate to the high heating rate.

The arguments have been fully considered but they are not persuasive because AAPA discloses that the further heating during the predetermined time interval is not uniform (page 6, lines 27-30) and the further heating continuously increases from the low heating rate to the high heating rate (fig. 2a).

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the

Art Unit: 2814


shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DiLinh Nguyen whose telephone number is (571) 272-1712. The examiner can normally be reached on 8:00AM - 6:00PM (M-F).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wael Fahmy can be reached on (571) 272-1705. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

DLN


HOAI PHAM
PRIMARY EXAMINER